YAVNEL', Abram Yul'yevich

YAVNEL', Abram Yul'yevich, kandidat meditsinskikh nauk; KOLOMIYTSEVA, O.I.,
redaktor; KLEYEVA, G.I., tekhnicheskiy redaktor

[Sanitation in collective farm villages] Sanitarnaia kul'tura
kolkhoznogo sela. Moskva, Izd-vo "Sovetskaia Rossiia," 1957.
45 p. (Biblioteka v pomoshch' lektoru, no.10)   (MLRA 10:10)
       (SANITATION)   (COLLECTIVE FARMS)

YAVNEL', Abram Yul'yevich; GORBEKLER, V.A., red.; BUL'DYAYEV, N.A., tekhn. red.

[Public sanitation of the collective farm village] Sanitarnoe blago-ustroistvo kolkhoznogo sela. Moskva, Gos. izd-vo med. lit-ry Medgiz, 1961. 69 p.
(MIRA 14:8)
(Sanitary engineering)   (Collective farms)

KANTOROVICH, V., inzhener; YAVNEL', B., inzhener.

Repair of the TRB-2 temperature control valve. Khol.tekh.33 no.3:
67-70 Jl-S '56.   (MIRA 9:10)
(Refrigeration and refrigerating machinery--Repairing)(Valves)

GRECHANIK, Ya.S.; YAVNEL', B.K.

Use of ground and artesian waters in air-conditioning systems.
Vod.i san.tekh. no.9:8-13 S '59. (MIRA 12:12)
(Air conditioning) (Water, Underground)

KANTOROVICH , Vadim Izrailevich; YAVNEL', Boris Konstantinovich;
   NIKOLAYEVA, N.G., red.; MEDRISH, D.M., tekhn.red.

[Systems, assembly and repair of refrigerating plants] Ustroi-
stvo, montazh, ekspluatatsiia i remont kholodil'nykh ustanovok.
Izd.2., perer. i dop. Moskva, Gostorgizdat, 1963. 416 p.
                                        (MIRA 16:12)
   (Refrigeration and refrigerating machinery)

YAVNEL, I.Yu.

Sugars by gravimetric methods. I. Yu. YAVNEL. *Farm. Zhur.* 8-9, 251 2 (1932).—Cu₂O obtained by reduction is ignited off the ashless filter paper, and from the wt. of CuO the sugar content is detd.   L. NASARBVICH

METALLURGICAL LITERATURE CLASSIFICATION

YAVNEL, I. Yu.

Ca

PROCESSES AND PROPERTIES INDEX

17

Determination of alkaloids in medical preparations. I. Yu. Yavnel and D. S. Belenitska. *Farm. Zhur.* 1933, 260-72.—Various methods are discussed and tables given. Preference is given to Volhard's argentometric method as modified by Kolthof.   L. Nazarevich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

YAVNEL, I. Yu.

CA

Preparing distilled water of good quality. I. Yu.
Yavnel *Zarmat-twt* 8, No. 2, 11 2(1915) A closed
system is described and illustrated in which NH_3 free
distd. water is obtained by distg. water acidified (to
methyl orange) with H_2SO_4.   Julius B. South

A18.1LA METALLURGICAL LITERATURE CLASSIFICATION

YAVNEL', I.Yu.

      History of the class struggle among pharmacy workers in Bakhmut
      (now Artemovsk, Stalino Province). Apt.delo 7 no.2:74-76 Mr-Ap '58.
          (ARTEMOVSK--PHARMACY)   (MIRA 11:4)

L 08119-67   EWT(m)/EWP(t)/ETI   IJP(c)   FDM/JD

ACC NR: AP6025983   (N)   SOURCE CODE: UR/0310/66/000/007/0027/0027

AUTHOR: Yavnel', S. (Engineer); Dobrinskiy, S. (Engineer)   34
                                                                    B

ORG: TsPKB

TITLE: Thermal treatment/of precision parts of diesel-engine fuel system

SOURCE: Rechnoy transport, no. 7, 1966, 27

TOPIC TAGS: metal heat treatment, martensite steel, steel, diesel engine, ENGINE
FUEL .SYSTEM, ENGINE COMPONENT

ABSTRACT: For obtaining high-quality precision parts for diesel-engine fuel systems,
the appropriate type of steel has to be selected and the proper heat treatment applied.
The Central Planning and Design Bureau of the Ministry of the River Fleet has con-
solidated the list specifying the types of steel which can be used for engine parts
and prescribing the method to be applied for their heat treatment. The metallurgical
process given for the heat treatment of 3 types of steel includes data on hardening
and cooling temperatures, changed properties, the martensite point, and the percentage
of austenite before and after cold treatment. Oil burners heat-treated by the
recommended technique, with gradual hardening in molten alkalies followed by cold
treatment, proved best after one season of operation. Orig. art. has: 2 tables. [GE]

SUB CODE: 11, 13/ SUBM DATE: none

Card   1/1 nst   UDC: 621.436.004 : 66.046

L 26267-66   EWT(m)/T/EWA(d)/EWP(w)/EWP(t)   IJP(c)   JD
ACC NR: AP6012582   (N)   SOURCE CODE: UR/0314/66/000/004/0020/0023

AUTHOR: Katikhin, V. D. (Engineer); Kofman, A. P. (Candidate of technical sciences);
Pashkov, P. O. (Doctor of technical sciences); Yavor, A. A. (Engineer)   38
                                                                                 B

ORG: none

TITLE: High-strength two- and three-layer steel as a structural material

SOURCE: Khimicheskoye i neftyanoye mashinostroyeniye, no. 4, 1966, 20-23

TOPIC TAGS: steel, high strength steel, clad steel, stainless steel clad steel,
clad steel strength, clad steel ductility/30KhGSA steel, 1Kh18N10T steel, 30KhSNVFA
steel   .18

ABSTRACT: Cladding of high-strength structural steels with a ductile material on
one or both sides greatly reduces the notch sensitivity of the latter. In this case,
the adhesion between the base steel and the cladding must be stronger than the
strength of the weaker metal. For example, hardened and tempered 30KhGSA steel has a
tensile strength of 160 kg/mm^2 and an elongation of 3—4%. When clad on one side with
1Kh18N10T steel (tensile strength 60 kg/mm^2, elongation 30%), 30KhGSA has a tensile
strength of 115 kg/mm^2 and an elongation of 2—4% with poor adhesion and 135 kg/mm^2
and 7—8% with strong adhesion. The notch sensitivity of 30KhGSA steel drops sharply
with one-side cladding, and the notch sensitivity of the two-side clad steel was
almost equal to that of 1Kh18N10T steel (the ratio of the tensile strength of notched

                                  UDC: 621.9-419:620.17

Card 1/2

L 26267-66

ACC NR: AP6012582   O

and smooth specimens at 200C increased from 0.45% to 0.78 and 94%, respectively).
Cladding increased the notch toughness of steels, especially those susceptible to
temper brittleness. The increase in ductility of two- and three-layer steels is due
mainly to uniform deformation, which is especially important in parts working under
tensile stresses. The mechanical properties of 30KhGSA steel clad with a 0.25 or
0.4 mm 1Kh18N10T layer did not decrease even after exposure for several hours to
stresses close to the tensile strength. Orig. art. has: 3 figures and 9 tables. [MS]

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 004/ ATD PRESS: 4243

Card 2/2

L 05798-67   EWT(m)/EWP(w)/EWP(t)/ETI   IJP(c)   JD

ACC NR: AR6031069   SOURCE CODE: UR/0277/66/000/007/0010/0010   3 4   /B

AUTHOR: Katikhin, V. D.; Kofman, A. P.; Yavor, A. A.

TITLE: Cladding as a means for decreasing the tendency of hardened steel to brittle failure

SOURCE: Ref. zh. Mashinostr mat konstr i raschet detal mash. Gidropr. Abs. 7.48.69

REF SOURCE: Sb. Materialy Nauchn. konferentsii. Sovnarkhoz Nizhne-Volzhsk. ekon. r-na. Volgogradsk. politekhn. in-t. T. 1. Volgograd, 1965, 303-308

TOPIC TAGS: cladding, steel cladding, brittle failure, brittleness, tensile strength

ABSTRACT: Data are presented on the tensile strength, uniform deformation, notch sensitivity ($\frac{\sigma \text{ notch}}{\sigma \text{ smooth}}$), and the notch toughness of 30KhGSA and 25KhSNVFA steels as a function of the thickness of a cladding layer of 1Kh18N10T steel (10—50%). Cladding reduces the tendency of notched specimens to brittle failure and eliminates temper brittleness. Thus, 30KhGSA steel on both sides, has an identical notch sensitivity to the 1Kh18N10T cladding material, but at the same time its tensile

UDC: 669.14.018;539.4;621.771.8

Card 1/2

L 05798-67

ACC NR: AR6031069   O

strength in smooth samples is twice as high as the strength of 1Kh18N10T steel.
Orig. art. has: 4 tables and a bibliography of 1 reference item. ,. [Translation of
abstract] .

SUB CODE: 13/

Card. 2/2 *bhh*

09/19/2001   CIA-RDP86-00513R001962310017-1

NR: AP6035948 /EWT(m)/EWP(k)/EWP(w)/EWP(v)/EWP(t)/ETI   IJP(c)   EM/J
(A)   SOURCE CODE: UR/0129/66/000/010/001

AUTHOR: Kofman, A. P.; Pashkov, P. O.; Yavor, A. A.

ORG: Volgograd Polytechnic Institute (Volgogradskiy politekhnicheskiy institu

TITLE: Mechanical properties of composite high-strength sheets and plates

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 10, 1966, 16-18

TOPIC TAGS: steel, stainless steel, composite steel strength, structural steel, high strength steel, composite steel, clad steel, medium alloy steel, structural steel, ductility/30KhGSA steel, 30KhNSVFA steel, Kh18N10T steel

ABSTRACT: The effect of cladding on the strength and ductility of high-strength meidum-alloy structural steels has been investigated. The 30KhGSA and 30KhNSVFA steel plates were clad on one or both sides with a layer of Kh18N10T austenitic steel. The cladding thickness was 20—50% of the thickness of the base plate. It was found that one-side and, particularly, two-side cladding significantly increased the ductility and decreased the strength of the steels. For example, unclad 30KhGSA steel hardened and low tempered had a tensile strength of 160 kg/mm2, an elongation of 4—5% and a reduction of area of 0—2%. The same steel clad on both sides with a Kh18N10T steel layer (total thickness of cladding—20% of the base plate thickness) had a tensile strength of 125 kg/mm2, and an elongation and reduction of area of 12 and 10—11%, respectively. Cladding 30KhNSVFA steel on both sides with

UDC: 620.17:669.868

Card 1/2

APPROVED FOR RELEASE: 09/19/2001   CIA-RDP86-00513R001962310017-1"

L 07464-67
ACC NR: AP6035948

Kh18N10T steel   (total thickness -- 25% of the base plate) decreased the strength from 165 to 105 kg/mm^2 but increased the elongation and reduction of area from 5—6 and 4—5% to 15 and 13%, respectively. Cladding also increased the notch toughness of clad steels, reduced the notch sensitivity and practically eliminated the susceptibility to temper brittleness. The beneficial effect of Kh18N10T steel is explained by compression stresses in the cladding originated owing to a different coefficient of thermal expansion. The beneficial effect of Armco iron was much weaker. Orig. art. has: 2 figures and 4 tables.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 004/ ATD PRESS: 5104

bimetal

Card 2/2

ACC NR: AR6029504

AUTHOR: Pashkov, P. O.; Yavor, A. A.

TITLE: Crack propagation in clad high strength steel

SOURCE: Ref. zh. Metallurgiya, Abs. 6I261

REF SOURCE: Sb. Materialy Nauchn. konferentsii. Sovnarkhoz Nizhne-Volzhsk. ekon. r-na. Volgogradsk. politekhn. in-t. T. I. Volgograd, 1965, 293-297

TOPIC TAGS: high strength steel, crack propagation, metal cladding

TRANSLATION: Crack representation according to shape was calculated in a high strength steel with a ductile surface layer. The critical crack length was calculated, at which the crack becomes unstable, according to the formula

$$L = \frac{\gamma E_{\text{T}}}{\sigma_p^2} + 2\frac{\alpha}{\pi} \cdot \frac{E_{\text{T}}}{E_{\text{M}}} \cdot \frac{\sigma_{b\text{M}}^2}{\sigma_p^2} \cdot h_{\text{M}}.$$

where γ is the effective surface energy per unit crack surface; E_{T} and E_{M} are the elastic moduli of the high strength steel and the cladding material of the layer respectively; σ_r is the fracture stress, numerically close to the ultimate strength of the high strength steel; $\sigma_{b\text{M}}$ is the ultimate tensile strength of the cladding material;

UDC: 539.4.01:669.14

Card 1/2

ACC NR: AR6029504

a is the coefficient of proportionality; and h_{M} is the thickness of the clad layer. The increase in uniform deformation in a clad sample relative to an unclad sample was determined by the formula

$$\Delta l_{p} = K \frac{\sigma_{b\mu}}{\sigma_{p}^{2}} \cdot h_{\mu}$$

where K is a coefficient. The experimental data that were obtained agreed satisfactorily with the theoretically obtained values of uniform deformation. L. Ustinov.

SUB CODE: 11,13

Card 2/2

ACC NR: AR6029505   SOURCE CODE: UR/0137/66/000/006/I039/I039

AUTHOR: Kofman, A. P.; Pashkov, P. O.; Yavor, A. A.

TITLE: Fracture characteristics of plated high strength steel

SOURCE: Ref. zh. Metallurgiya, Abs. 6I262

REF SOURCE: Sb. Materialy Nauchn. konferentsii. Sovnarkhoz Nizhne-Volzhsk. ekon. r-na.
Volgogradsk. politekhn. in-t. T. 1. Volgograd, 1965, 298-302 .

TOPIC TAGS: high strength steel, plasticity

TRANSLATION: The natural improvement of plasticity and structural reliability was
shown in steel as a result of plating its surface with a thin layer of highly ductile
material. By applying a highly ductile material on its surface, a hard steel had a low-
er notch sensitivity. The change in the above properties was caused by the difficulty
of growth and of the uncovering of the crack surface by means of an additional localiz-
ed extension of the plated material. L. Ustinov.

SUB CODE: 11,13

                                        UDC: 539.4.01:669.14

Card 1/1

CA

YAVIVEL, V.

27

Dehydrogenation of fats. N. Tronky and V. Yavnel. *Maslobono-Zhirovoe Delo* 1936, No 2, 3, 10.—To prep. a drying oil from sunflower oil the authors treated the latter for 4 hrs at 320° with 1% Ni + 0.25% Hg. The treated oil had an I no of 144.4 and showed satisfactory drying properties. These investigations are being continued.

F. Historians

METALLURGICAL LITERATURE CLASSIFICATION

RAYKH, I.Ya., inzhener; YAVNIK, A.I., inzhener.

Use of selenium rectifiers under varying loads with voltage
control. Prom.energ. 11 no.5:14-15 My '56.   (MIRA 9:9)
    (Electric current rectifiers)

YAVNILOVICH   Ye. A.

PHASE I BOOK EXPLOITATION

AUTHOR: See table of contents

TITLE: Manual of Government Standards and Technical Specifications for Ferrous Metals (Spravochnik po gosudarstvennym standartam i tekhnicheskim usloviyam na chernyye metally)

PUB. DATA: Gosudarstvennoye nauchno-tekhnicheskoye izdatel'stvo literatury po chernoy i tsvetnoy metallurgii, Moscow, 1956, 567 pp., 14,500 copies.

ORIG. AGENCY: Ministerstvo chernoy metallurgii SSSR

EDITORS: Matyushina, N. V.; Gordiyenko, V. K.; Editor of Publishing House: Rozentsveyg, Ya. D.; Tech. Editor: Berlov, a. P.

PURPOSE: This manual was compiled for design engineers, technologists, economists and supply specialists to be used as an aid in selecting and ordering ferrous metals: foundry iron, conversion pig, ferroalloys and steel bars, sheet, shapes, and wire.

113

Manual of Government Standards and Technical Specifications for Ferrous
Metals (Cont.)

COVERAGE: This book contains data on the most widely-used structural shapes,
listing the basic requirements for production and supply (Chemiscal
composition, mechanical properties, external characteristics, marking,
and packing) as determined by the standards and technical specifications
established as of October 1, 1956. The manual deals with general-
purpose types, shapes, and grades used by the majority of consumers,
and with special-purpose types used by a large number of consumers. It
does not list steel types, shapes, and grades having a narrow appli-
cation in farm-machinery construction, transportation-machinery
construction, in tractor, automobile, and aircraft production, in the
electrical industry, etc., or data on steels for metallurgical con-
version (billets, rolling stock, scalps for pipes, draw-bench tubes,
cylinder tubing, etc.). Shapes and sizes which were not in production
by October 1, 1956, are listed separately.

113

Manual of Government Standards and Technical Specifications for Ferrous Metals (Cont.)

Classification and Chemical Composition   27

Part II.   Ordinary and High-quality Steel (A. S. Kaplan, G. N. Kharkovtsev, V. S. Slavkin, Ye. A. Yavnilovich)

    I.   Assortment:

        A.   Bars, Strips, Bands and Angles

            1.   Rounds   40
                Ordinary and high-quality rounds (GOST 2590-51)   42
                Rounds for coiled springs (GOST 7419-55)   42
                Rounds for tools (GOST 1133-41)   42
                Rounds for high-speed cutting tools (GOST 5650-51)   43
            RounRounds for files (GOST 5210-50)   44
                Rounds for permanent magnets (GOST 6862-54)   44

VYDREVICH, B.I.; KARANDASHOV, Yu.I.; GAVRILIN, L.F.; BLIZNYUK,
        V.A.; KOL'TSOV, M.M.; YAVNILOVICH, Ya.A.; FROLOVA,
        L.A.; MOSYAKOV, Yu.F.

[Metal products for industrial use; a handbook] Metallo-
izdeliia promyshlennogo naznacheniia; spravochnik. Pod
red. E.A.IAvnilovicha. Moskva, Metallurgiia, 1966. 727 p.
                                        (MIRA 19:1)

MONOSZON, N.A.; STOLOV, A.M.; GASHEV, M.A.; SPEVAKOVA, F.M.;
YAVNO, A.Kh.; KORNAKOV, Ye.V.; KULAKOV, F.M.; NADGORNYY, V.P.;
GORSHKOVA, Ye.G.

Power supply system of the electromagnet of the 7 bev. proton
synchrotron. Prib. i tekh. eksp. 7 no.4:27-33   Jl-Ag '62.
(MIRA 16:4)

1. Nauchno-issledovatel'skiy institut elektrofizicheskoy
apparatury Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy
energii SSSR.
(Electromagnets)   (Synchrotron)

GASHEV, M.A.; GUSTOV, G.K.; D'YACHENKO, K.K.; KOMAR, Ye.G.; MALYSHEV,
    I.F.; MONOSZON, N.A.; POPKOVICH, A.V.; RATNIKOV, B.K.; ROZHDESTVENSKIY,
    ·B.V.; RUMYANTSEV, N.N.; SAKSAGANSKIY, G.L.; SPEVAKOVA, F.M.; STOLOV,
    A.M.; STREL'TSOV, N.S.; YAVNO, A.Kh.

Principal mechanical characteristics of the experimental thermo-
nuclear plant "Tokamak-3." Atom. energ. 17 no.4:287-294 O '64.
                                                (MIRA 17:10)

40739

S/120/62/000/004/004/047
E194/E420

AUTHORS: Monoszon, N.A., Stolov, A.M., Gashev, M.A.,
             Spevakova, F.M., Yavno, A.Kh., Kornakov, Ye.V.,
             Kulakov, F.M., Nadgornyy, V.P., Gorshkova, Ye.G.

TITLE: The supply system for the electromagnet of a proton-
             synchrotron of 7 Gev

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 27-33

TEXT: The article describes the supply system for an electro-
magnet, the field of which increases at the steady rate of
6.7×10^3 Oe/sec to reach a maximum value of 9300 Oe in 1.55 sec
and then falls off exponentially in 0.8 sec, the repetition
frequency is 10 to 12 cycles per minutes.   The voltage on the
electromagnet is increased from 5000 to 10250 V with a maximum
current of 2500 A.   An induction motor of 3500 kW, 6 kV,
740 rpm drives through a fluid coupling a 6 phase alternator of
peak output 37500 kW, 8.2 kV, and an auxiliary generator of
250 kW, 380 V for auxiliary supply to the 12-phase ignitron
rectifier.   During the current decrement period the rectifier
operates as an inverter.   A description of the smoothing circuit
Card 1/2

S/120/62/000/004/004/047
The supply system for the electro-...   E194/E420

is given.   Particular fault conditions of the circuit are
analysed and the protective devices fully described.   The
performance is illustrated by oscillograms.   Schematic and
block circuit diagrams are given and an outline drawing of the
ignitrons.   There are 8 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy
             apparatury GKAE (Scientific Research Institute for
             Electrophysical Apparatus GKAE)

SUBMITTED: April 10, 1962

Card 2/2

Y H V IN C ; H . R H -

L 17221-65   EWT(1)/EWG(k)/EWT(m)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EWA(b)-2/EWA(m)-2
Pz-6/Po-4/Pab-10/Pl.J4   IJP(c)/SSD(b)/ASD(p)-3/BSD/AEDC(b)/RAEM(a)/ESD(gs)/ESD(t)
DM/AT
ACCESSION NR: AP4047415   S/0089/64/017/004/0287/0294

AUTHORS: Gashev, M. A.; Gustov, G. K.; D'yachenko, K. K.; Komar,
Ye. G.; Maly*shev, I. P.; Monoszon, N. A.; Popkovich, A. V.;
Ratnikov, B. K.; Rozhdestvenskiy, B. V.; Rumyantsev, N. N.; Saksa-
ganskiy, G. L.; Spevakova, F. M.; Stolov, A. M.; Strel'tsov, N. S.;
Yavno, A. Kh.

TITLE: Main technical characteristics of the "Tokamak-3" experi-
mental thermonuclear installation

SOURCE: Atomnaya energiya, v. 17, no. 4, 1964, 287-294

TOPIC TAGS: thermonuclear pinch, thermonuclear fusion, plasma re-
search, plasma pinch/ Tokomak-3

ABSTRACT: The "Tokamak-3" is intended for the investigation of a
toroidal quasi-stationary discharge in the strong longitudinal mag-
netic field. The toroidal discharge is produced in the vacuum cham-

Card 1/3

L 13221-65
ACCESSION NR: AP4047415

ber by a vortical electric field, and acts as an equivalent secondary turn of a pulse transformer. The produced plasma pinch is stabilized with a longitudinal magnetic field of a toroidal solenoid, inside which the vacuum chamber is located. The magnetic core of the pulse transformer carries the primary vortical-field winding, the demagnetization winding, and the winding for induction heating. The set-up is fed from special power systems. The electromagnetic system, the power supply, and the vacuum system are described in some detail. The longitudinal field intensity reaches 40 kG. The vortical field values are 250 and 50 V per turn with pulse durations 10 and 50 milliseconds, and with programming of the waveform such as to maintain a constant current in the plasma pinch. The power supply delivers a peak power of 77,000 kW, maximum 7000 A, no-load voltage 11 kV, and stored energy 180 million Joules. The vortical field is fed from four capacitor banks rated 1000 μF at 20 kV, 11,000 μF at 10 kV, 78,000 μF at 5 kV, and 30,000 μF at 5 kV. The capacitor-bank parameters can be varied over a wide range. The vacuum in the liner does

Card   2/3

L 13221-65
ACCESSION NR: AP4047415 O

not exceed 1--2×10^{-7} mm Hg during the interval between gas admis-
sion, with the pressure in the outside chamber being 1--2×10^{-6}
mm Hg. Orig. art. has: 8 figures.

ASSOCIATION: None

SUBMITTED: 23Nov63

ENCL: 00

SUB CODE: NP, ME NR REF SOV: 000   OTHER: 000 J

Card   3/3

FD-1278

YAVNOV, N. P.
USSR/Medicine - Veterinary

Card 1/1   Pub. 137-15/17

Author   : Yavnov, N. P., Zootechnician

Title   : Canvas bath tub for bathing sheep

Periodical : Veterinariya, 10, 62-63, Oct 1954

Abstract   : Special type bath tubs, made of canvas, are discussed. These canvas
               bath tubs are recommended for use in the treatment and prevention of
               mange in sheep and their infestation with Haemosporodia parasites.
               It is very easy to assemble the parts that form the canvas bath tub;
               they are much cheaper than those made of brick or cement. Illustra-
               tions.

Institution : - -

Submitted   : - -

BONDARENKO, T.M.; GORBOV, V.G. [Horbov, V.H.]; KOMAROV, I.Z.; VOYTOVICH,
     O.S. [Voitovych, O.S.]; KAMINSKIY, F.T. [Kamins'kyi, F.T.];
     IAKOVLEVA, Ye.O. [IAkovlieva, IE.O.]; IAKOVLEV, S.B. [IAkovliev,
     S.B.]; IAVONENKO, O.Ya. [IAvonenko, O.IA.]; VISHCHUN, I.A., red.;
     ALEKSANDROV, M.O., tekhn.red.

     [Our territory; brief guide-reference book] Nash krai; korotkyi
     putivnyk-dovidnyk. Mykolaiv, Mykolaivs'ke obl.upr.kul'tury,
     1958.   94 p.   (MIRA 13:2)

     1. Nikolayev. Oblastnyi kraieznavchyi muzei.
            (Nikolayev Province--Guidebooks)

<u>L 1319-66</u>   EWT(m)/EWP(w)/EWP(i)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) JD/HW/EM

ACCESSION NR: AP5022175   UR/0032/65/031/009/1125/1126
                                          620.171:621.9

AUTHOR: Kofman, A. P.; Pashkov, P. O.; Yavor, A. A.

TITLE: Uniform strain of bimetals

SOURCE: Zavodskaya laboratoriya, v. 31, no. 9, 1965, 1125-1126

TOPIC TAGS: bimetal, carbon steel, stainless steel, metal stress, strain, stress analysis

ABSTRACT: The uniform strain of bimetals is evaluated as a function of the uniform strain of the material of the layers. Considering the stress-strain diagrams of the bimetal and layer material (see Fig. 1 of the Enclosure), the uniform strain of the bimetal may be defined as the sum

$$\varepsilon = \varepsilon_1 + \Delta\varepsilon \qquad (1)$$

where ε is the uniform strain of the more rigid layer. Segment $\Delta\varepsilon$ is proportional to the difference $\varepsilon_2 - \varepsilon_1$ and to the relative thickness of the clad layer h_2/h_1 (h being the thickness of the bimetallic sheet), i.e.,

$$\Delta\varepsilon = (\varepsilon_2 - \varepsilon_1) \cdot \frac{h_2}{h} \qquad (2)$$

Card 1/3

L 1319-66

ACCESSION NR: AP5022175

The uniform strain of the bimetal will be given by

$$\varepsilon = \varepsilon_1 + (\varepsilon_2 - \varepsilon_1) \cdot \frac{h_2}{h}.$$

(3)

Formula (3) was verified on sheet specimens of the bimetal carbon steel-stainless steel for various cladding thicknesses and various tempering modes, and the results warrant its use in practical calculations. Orig. art. has: 2 figures and 3 formulas.

ASSOCIATION: Volgogradskiy politekhnicheskiy institut (Volgograd Polytechnic Institute)

SUBMITTED: 00   ENCL: 01   SUB CODE: MM, AS

NO REF SOV: 003   OTHER: 000

Card 2/3

L 1319-66
ACCESSION NR: AP5022175
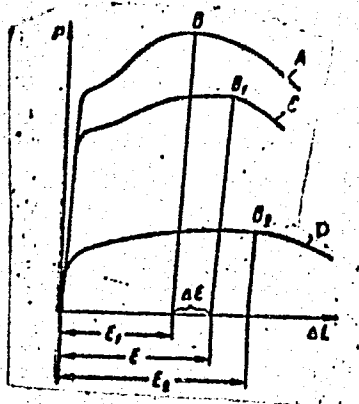
Fig. 1. Stress-strain diagram of the bimetal (C) and layer material (A) and (D)

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L 05014-67   EWT(m)/EWP(w)/EWP(t)/ETI   IJP(c)   JD :

ACC NR: AR6031296   SOURCE CODE: UR/0277/66/000/006/0011/0011

AUTHOR: Kofman, A. P.; Pashkov, P. O.; Yavor, A. A.

TITLE: Failure characteristics of high-strength clad steel

SOURCE: Ref. zh. Mashinostroitel'nyye materialy, konstruktsii i raschet detaley mashin. Gidroprivod, Abs. 6.48.69

REF SOURCE: Sb. Materialy Nauchn. konferentsii. Sovnarkhoz Nizhne-Volzhsk. r-na. Volgogradsk. politekhn. in-t. T. I. Volgograd, 1965, 298-302

TOPIC TAGS: high strength steel, clad steel

ABSTRACT: A substantial improvement was shown experimentally in the ductility and structural reliability of steel by cladding it with a thin layer of material of high plasticity. In particular, it was shown that the uniform deformation of hard steel increased proportionately with the thickness of the cladding layer up to a certain value, beyond which the deformation began to decrease. It was proven that the notch sensitivity of a hard steel decreases when a material of high plasticity is applied to its surface, which, however, decreases the susceptibility of the steel to brittle fracture. The changes in the above properties of hard steel

Card 1/2   UDC: 669.14.018.295:539.4

L 05014-67

ACC NR: AR6031296

with a soft cladding layer on its surface inhibits the enlarging and opening of the
surface cracks due to additional local elongation of the cladding material. L.
Ustinov. [Translation of abstract]

SUB CODE: 11/

possible armor material

Card 2/2

YAVOR, I.P.

SUBJECT   USSR / PHYSICS   CARD 1 / 2   PA - 1611
AUTHOR   KOMAR, A.P., JAVOR, I.P.
TITLE   The Photoprotons from A^{40}
PERIODICAL Žurn.eksp.i teor.fis, 31, fasc.3, 531 - 531 (1956)
           Issued: 12 / 1956

The angular distribution of the photoprotons from A^{40} which was irradiated with the
γ-bundle of a synchroton with the maximum energy of 90 MeV, was investigated. The
photoprotons with an energy of from 2 to 10 MeV were registered by means of a
WILSON chamber which was filled at a pressure of 1,4 atm with argon and with the
vapors of a mixture of ethyl alcohol and water. The Wilson chamber, which has a dia-
meter of 30 cm and a depth of 7 cm, works in a cycle with overpressure with a period
of from 10 to 15 sec. The argon contained by the Wilson chamber was irradiated with
a collimated γ-bundle of 1,8 cm diameter, which incides into the chamber trough an
aluminium window (100μ) in its lateral wall. The proton traces formed as a result
of the reaction (γ,p) were photographed stereoscopically.
302 traces were dealt with. Angles were measured by the reprojection method and with
an accuracy of from 1 to 2°. The histogram contained in the attached drawing was drawn
by joining the traces with intervals of 20°. Directivity in a forward direction with
a maximum at the angle of 70° is distinctly discernible. The course taken by the curve
obtained here for the angular distribution of the photoprotons from argon agrees
sufficiently well with the course of angular distribution obtained by B.M. SPICER,
Phys.Rev., 100, 791 (1955) by the method of nuclear emulsions and with a maximum
energy of the γ-bundle of 22,5 MeV.

From the character of the angular distribution of the photoprotons obtained
here it follows that an electric dipole-like absorption of γ-quanta occurs on the
nuclei of the argon. Asymmetry may be due to the direct photoeffect or to the
quadrupolelike absorption of the γ-quanta.
This is a verbal Translation of this short report.

INSTITUTION : Leningrad Physical-Technical Institute of the
              Academy of Science of the USSR.

YAVOR, I. P.

BAZHANOV, Ye. B., Chizhov, V. P., KOMAR, A. P., KUL'CHITSKIY, L. A., VOLKOV, Yu. M., and YAVOR, I. P.

"Photodisintegration of Nuclei by Gamma-Radiation from Leningrad Synchrotron at 60-90 Mev."

Physics. Inst. im Lebedev, Acad. Sci. USSR

paper submitted at the A-U Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 Nov 57.

Yavor, I. P.

AUTHOR: YAVOR,I.P., KOMAR,A.P.   PA - 2815
TITLE: High-Speed Cloud Chamber Synchronized with Synchrotron. (Bystrodey-
                 stvuyushchaya kamera Vil'sona sinkhronizovannaya s sinkhrotronom,
                 Russian)
PERIODICAL: Zhurnal Tekhn.Fiz. 1957, Vol 27, Nr 4, pp 868-874 (U.S.S.R.)
                 Received: 5 / 1957   Reviewed: 7 / 1957

ABSTRACT: The construction and the method of operation of the WILSON chamber is
                 described. The WILSON chamber works according to a cycle with over-
                 pressure and 10-15 sec periods. The control scheme with pressure modi-
                 fication in the chamber and some details on the method of operation
                 are described. In the second part the synchronization scheme of the
                 work of the chamber and its control elements as well as those of the
                 synchrotron are given. The scheme worked out in the laboratory of the
                 institute satisfies the requirements for the investigation of photo-
                 nucleus reactions and elasticity is such that it may be used also for
                 complicated working conditions. The basic elements are: an impulse
                 generator which determines the working period of the chamber
                 ($T = 5 + 60$ sec) and the scheme of coincidence which gives the per-
                 forming schemes (vibrators with delays and amplifications) its impulses.
                 The direct control of the output of γ-ray impulses of the synchrotron
                 is accomplished by means of two types of impulses. The synchronization

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High-Speed Cloud Chamber Synchronized with Synchrotron.   PA - 2815

takes place for 100 MeV. The scheme works reliably and needs no
subsequent regulation.

ASSOCIATION: Academy of Science of the U.S.S.R.
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress

Card 2/2

Yavor, I.P.

USSR/Nuclear Physics - Nuclear Reaction   C-5

Abs Jour   : Ref Zhur - Fizika, No 1, 1958, 494

Author   : Komar, A.P., Yavor, I.P.

Inst   : Leningrad Physical-Technical Institute

Title   : Photofission of Neon Nuclei.

Orig Pub   : Zh. eksperim. i teor. fiziki, 1957, 32, No 3, 614-615

Abstract   : The photofission of Ne (natural mixture of isotopes) under
              the influence of bremsstrahlung of a synchrotron with
              $E_{\gamma max} = 70$ Mev, was studied with the aid of a high speed
              cloud chamber in a magnetic field. Of the 719 recorded
              fissions, 350 cases were (γ, p), reactions, 137 were
              (γ,pn), 64 were (γ,2p), 21 were (γ,2α), 143 were
              (γ, α p), and 2 were (γ,5α) reactions. The reactions
              (γ,p) and (γ,pn) were distinguished by the recoil-nu-
              clei momenta; the (γ,p) and (γ, α) reactions were

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USSR/Nuclear Physics - Nuclear Reaction   C-5

Abs Jour   : Ref Zhur - Fizika, No 1, 1958, 494

            distinguished by the ionization density and the ranges of
            the recoil nuclei. The angular distribution of the photo-
            protons with energies 1 -- 15 Mev are in good agreement
            with the expression a + b $\sin^2 \Theta$, where $b/a \approx 2.5$.
               A difference is noticed between the angular distribu-
            tions of photoprotons from He and Ar (Referat Zhur Fizika,
            1957, 13797), caused apparently by the difference in the
            shell structure. The integral cross section of the
            (γ,p) reaction for Ne was found to be o.16 $\pm$ 0.08 Mev-
            barn.

     Card 2/2

YAVOR, I. P.   Cand Phys-Math Sci -- (diss)   "Study of photo-nuclear reactions on argon and neon by the means of a Wilson chamber."   Len, 1958.   7 pp (Acad Sci USSR.   Phys-Tech Inst), 150 copies   (KL, #36-58, 110)

-8-

AUTHOR: Yavor, I. P.

SOV/56-34-6-7/51

TITLE: The Photodisintegration of A^{40} (Fotorasshchepleniye A^{40})

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 34, Nr 6, pp 1420-1425 (USSR)

ABSTRACT: First the author reports on the previous papers on this subject. For the purpose of further investigations of the photo-disintegrations of A^{40} nuclei and of the verification of previous results the author carried out experiments by means of a cloud chamber. It recorded any case of photodisintegration in which charged particles were produced. the cloud chamber was filled up with argon and this gas was irradiated by the γ-bremsstrahlung (maximum energy 70 MeV) of the synchrotron of the FTI AN SSSR (= Fiziko-tekhnicheskiy institut Akademii nauk SSSR, Physical-Technical Institute, AS USSR). Helium mixed with argon, was irradiated by the γ-radiation; it was used as a standard gas for the control of the radiation dose. The following part of the paper deals with the yields of the photonuclear reactions. The author reports on the reactions (γp), (γpn), (γd), $(\gamma\alpha)$, and $(\gamma\alpha n)$. The proton energy was de-termined in the following way: 1) from the curvature of the

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tracks in a magnetic field, 2) from the ranges of the recoil
nuclei (in the case of the (γp) reaction, 3) from the ranges of
the protons in the chamber for protons with low energies, and
4) in a very crude manner from the ionization density which
was visible. The energy spectrum of the photoprotons of A^{40}
was measured up to a proton energy of 15 MeV. A histogram shows
the obtained energy distribution of the photoprotons produced
in the photodisintegration of A^{40}. The same figure shows also
the results of the calculations carried out according to the
statistical theory of the nuclear reactions and according to
the theory of the direct photoeffect. The theoretically cal-
culated distributions describe well the experimental spectrum
of the photoprotons if the yields of the direct photoprotons and
of the evaporation photoprotons satisfy the ratio 1 : 1,2.
A further histogram shows the angular distribution of the
photoprotons from 2 to 15 MeV in the laboratory system. This
angular distribution may be described by the function

$I(\theta) = A + B(\sin\theta + p\,\sin\theta\,\cos\Theta)^2$ with A = 27, B = 30, and
p = 0,5. The parameter p expresses the relation between the

Card 2/4   electrical dipole absorption and the magnetic absorption of

The Photodisintegration of A^{40} SOV/56-34-6-7/51

the γ-quanta, that is $\sigma_{quadrupole}/\sigma_{dipole} = p^2/5$. The experimental results obtained in this paper are not in contradiction with the results of the most papers on the photo-nuclear reactions on the elements of medium atomic weight. The dipole character of the absorption of the γ-quanta by the A^{40} nuclei was verified in several ways. At energies of the γ-quanta up to 70 MeV, on the argon nuclei one observes principally the reactions (γp) and (γn) with approximately equal cross sections and a small admixture of the reactions $(\gamma\alpha)$, $(\gamma\alpha N)$, and (γpn). The author thanks A. P. Komar for his constant interest in this paper and for some useful remarks. There are 2 figures, 1 table, and 20 references, 3 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physical-Technical Institute, AS USSR)

SUBMITTED: January 10, 1958

Card 3/4

The.Photodisintegration of A^{40} SOV/56-34-6-7/51

Card 4/4

24.6810

TITLE: Photodisintegration of N^{14} Nuclei

ABSTRACT: Certain facts concerning the photodisintegration of N^{14} nuclei had
hitherto been unexplained. The present paper clarifies certain de-
tails of photodisintegration, especially the mechanism of the (γnp)
reaction, which has a large yield. This photodisintegration was in-
vestigated here by means of a cloud chamber in a constant magnetic
field (H = 6700 oersteds). These experiments were made with maximum
γ- bremsstrahlung energy of 90 Mev. The photodisintegration were
identified by comparing certain factors (as e.g. range, density of
ionization, direction of the tracks, etc.). Moreover, the proton
energy (determined from the curvature of the proton track in the
magnetic field) was compared with the energy determined from the
range of the recoil nucleus. In the (γnp) reaction these energies
can differ greatly from one another. It is possible by this method
to make a reliable distinction between the reactions (γp) and (γnp).
Furthermore, it was possible to determine accurately the departure
angles of the neutrons of the reaction (γnp). Table 1 contains the

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Photodisintegration of N^{14} Nuclei

68980
S/020/60/131/02/018/071
B013/B011

relative yields of the photonuclear reactions on nitrogen. These data were determined from 2633 photodisintegrations. The total absorption cross section of γ-quanta amounted to 9.8±0.8 mb/Q. The total integral absorption cross section of γ-quanta on N^{14} (0.3 Mev.barn) determined by the authors in the experimental way is in good agreement with the corresponding theoretical value (0.29 Mev.barn). The proton yield at relatively high energies is very considerable. The dependence of the cross section of the reaction (γp) on the energy of the γ-quanta was determined from the energy spectrum of the photoprotons of the reaction (γp). The maximum of the cross section is found at the energy ~ 23 Mev of the γ-quanta. The integral cross section of the reaction (γp) amounts to 0.07 Mev.barn. Figure 2 shows the angular distribution of the protons of the reaction (γp). For E_p from 0.4 to 50 Mev it can be described by the expression $1 + 1.3 \sin^2\theta + 0.16 \cos\theta$, and for $E_p > 10$ Mev $1 + 2\sin^2\theta + 0.25\cos\theta$ holds. The major part of the reactions (γp) on nitrogen is caused by a direct resonance process. All 12-Mev protons stem from the $p_{3/2} \rightarrow d_{5/2}$ transitions. Figure 1

Card 2/3   shows the energy spectrum of the protons emitted in the reaction

Photodisintegration of N^{14} Nuclei   S/020/60/T89802/018/071
                                                                 B013/B011

(γnp). The maximum of the proton-energy spectrum is found at proton energies of $\sim$ 1.5 Mev. The neutrons are probably emitted with greater energies as compared with the protons. These and other results can be explained by the assumption that in most cases ($\sim$2/3) the reaction (γnp) proceeds as follows: A neutron is first emitted with relatively great energies, and thereupon a proton from the excited nucleus N^{13}. On the strength of data found here it is possible to estimate the contribution of the protons that depend on the "quasi-deuteron" mechanism of the interaction of γ-quanta with the nitrogen nuclei, and also the yield of protons with energies of more than 18 Mev can thus be estimated. This contribution is of the order of $\sim$ 1%. Further data concerning other photodisintegrations of nitrogen are being worked out. There are 2 figures, 1 table, and 12 references, 3 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Institute of Physics and Technology of the Academy of Sciences of the USSR)

SUBMITTED: December 16, 1959

Card 3/3

S/020/60/135/002/011/036
B019/B077

AUTHORS: Komar, A. P., Academician of the AS UkrSSR, Krzhemenek, Ya.,
               and Yavor, I. P.

TITLE: Photodisintegration of Ne^{22}

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 2,
               pp. 291 - 293

TEXT: The investigations of Ne^{22} photodisintegration were done in a cloud
chamber which was placed in a magnetic field of 6700 oersteds. The isotopic
mixture was composed of 89% Ne^{22}, 10% Ne^{20}, and 1% Ne^{21}. The maximum energy
of the γ-beam was 90 Mev. Table 1 gives several relative outputs of the
recorded photodisintegrations. The energy distribution of the photoprotons
of the (γ, p) and (γ, pn) reactions are given along with their angular
distribution. A short discussion of the results follows. There are
4 figures, 1 table, and 4 references: 3 Soviet and 1 US.

SUBMITTED: July 15, 1960

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S/020/60/135/002/011/036
B019/B077

Legend to Table 1:
1 - type of reaction;
2 - reaction threshold of Ne^{20} photodisintegration (Mev);
3 - threshold for Ne^{22} (Mev);
4 and 5: reaction yield in % for Ne^{20} and Ne^{22};
6 - number of events;
7 - absorption cross section.

Реакция 1	Ne^{20} порог, Мэв 2	Ne^{22} порог, Мэв 3	Ne^{20} выход, % 4	Ne^{22} выход, % 5
γ, p	12,9	15,3	30	22
γ, n	16,9	10,4	17	30
γ, 2n	(24,1)	(17,1)	—	—
γ, α	4,7	9,7	1	7
γ, pn	23,3	23,4	0	18
γ, αp	16,9	25,6	22	1,5
γ, αn	21,2	17,7	7,5	8,5
Другие звезды	—	—	7,5	13
Число случаев 6			1928	1759
σ dE, Мэв·мбн 7			430	440

Card 2/2

YAVOR, I.P.

Rectangular Wilson chamber. Prib. i tekh. eksp. 6 no.2:169
Mr-Ap '61.   (MIRA 14:9)

1. Fiziko-tekhnicheskiy institut AN SSSR.
                  (Cloud chamber)

88567

21. 2300 (2217, 2417, 1033)

AUTHORS: Kulikov, A. V., Chizhov, V. P., and Yavor, I. P.

TITLE: A Method of Investigating Complex Nuclear Reactions

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 1, pp. 77-80

TEXT: An apparatus is described, which is intended for the study of
accelerated charged particles. The principle elements of this apparatus,
which is intended to be used in experiments made on the synchrotron of the
Institute of Physics and Technology of the AS USSR, are a cloud chamber, a
scintillation telescope, and an electronic circuit, which connects the
apparatus described with the synchrotron. In Fig. 1 the cloud chamber, on
which very high demands are made, are shown in form of a scheme. For the
photographing of the tracks in the cloud chamber, two miniature lighting
fixtures are provided. The cloud chamber controls three identical
scintillation counters, each of which consists of two counters in co-
incidence, one NaI(Tl)-crystal, and one photomultiplier. The pulse height
in the first counter is approximately proportional to the specific ioniza-
tion loss of the recorded particle, the pulse height of the second counter

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A Method of Investigating Complex Nuclear
Reactions

S/020/61/136/001/014/037
B019/B056

is approximately proportional to the particle energy. In this manner,
energy and mass of the recorded particles are determined. The identifica-
tion of particles has already been described in an earlier paper (Ref. 5).
The question was studied under what conditions the background of light
particles may be reduced to a minimum. A test of this apparatus showed
that it is especially suited for investigating reaction modes (γ,pn),
(γ,dn), $(\gamma,2p)$, (γ,dp) etc. The authors thank Professor A. P. Komar for
his advice and interest. There are 4 figures and 5 references: 4 Soviet
and 1 US.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Institute
              of Physics and Technology of the Academy of Sciences, USSR)

PRESENTED: July 19, 1960, by B. P. Konstantinov, Academician

SUBMITTED: July 5, 1960

Legend to Fig. 1: Cloud chamber: 1) Upper glass window. 2) Lateral glass
wall. 3) Grid. 4) Velvet. 5) Rubber diaphragm. 6) Basis net. 7) Basal

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B019/B056

plate. 8) Ring. 9) Outlet opening.
Legend to Fig. 2: Block diagram of the device: 1), 2) Amplifier. 3) Mixer.
4) Paraphase amplifier. 5) Double-beam oscilloscope. 6) Limiter.
7) Summator. 8) and 9) Discriminators. 10) Coincidence circuit. 11) Mixer.
12) Blocking circuit. 13) Control system of the cloud chamber clearing
field. 14) Control system of accelerator intensity. 15) Trigger. 16) Valve
control. 17) Control for auxiliary devices.

Fig. 1
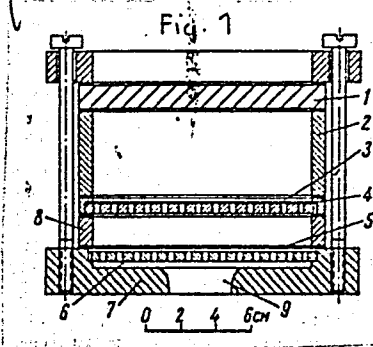
Card 3/4

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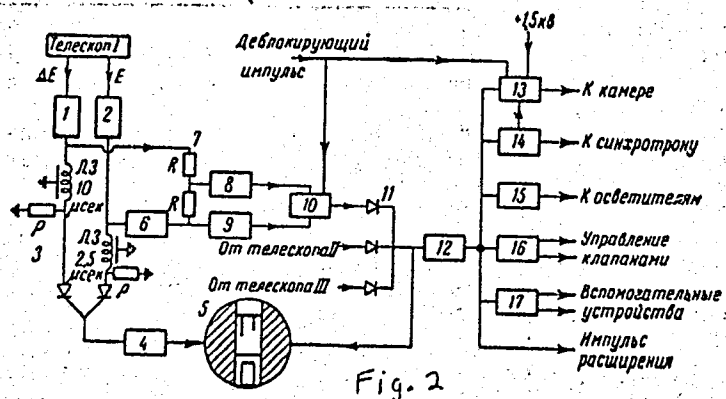
Fig. 2

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21420

S/120/61/000/002/033/042
E210/E594

24.6810

AUTHOR: Yavor, I. P.

TITLE: Rectangular Wilson Chamber

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.2, p.169

TEXT: One of the most complicated parts of a Wilson chamber
is the mechanism for regulating the expansion and the complexity
increases with increasing dimensions of the chamber and increasing
operating pressure. A rectangular design is proposed with a
rubber diaphragm and an active volume of $50 \times 50 \times 20$ cm^3, which
does not contain a mechanism for controlling the degree of
expansion.   The chamber operates at a pressure slightly above
the atmospheric (1.2 to 1.5 atm) applying over-compression.   The
dead time is about 30 sec. The gas expansion is controlled by
positioning the rubber diaphragm, prior to measurements, into some
intermediate position between the top grid with velvet, and a stop
that limits the downward movement of the diaphragm (in the given
case the bottom of the chamber serves as the stop). Thereby, the
expansion depends on the position of the diaphragm prior to
operation. By changing the position of the diaphragm and selecting
Card 1/2

21420

Rectangular Wilson Chamber

S/120/61/000/002/033/042
E210/E594

appropriately the pressure in the bottom part of the chamber, the expansion can be controlled. The pressure for controlling the expansion is measured by a pressure gauge with a pointer which is fitted with two mobile contacts that are connected to appropriate electromagnetic valves. The position of one of the contacts determines the magnitude of the maximum compression, i.e. the degree of over-compression, the position of the other determines the magnitude of expansion. This system ensures stable conditions of operation of the chamber.

[Abstractor's Note: This is a complete translation]

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR
            (Physico-Technical Institute AS USSR)

SUBMITTED: March 1, 1960

Card 2/2

S/056/62/043/005/015/058
B102/B104

AUTHORS: Komar, A. P., Kulikov, A. V., Chizhov, V. P., Yavor, I. P.,
            Volkov, Yu. M.

TITLE: Emission of fast deuterons in the photodisintegration of O^{16}

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, .v. 43,
            no. 5(11), 1962, 1657-1659

TEXT: Chizhov et al. (Nucl. Phys. 34, 562, 1962) have found that the deu-
teron yield from (γ,d) reactions with Li^6, Be^9, $B^{10,11}$ and Cu can be
observed only when E_γ exceeds the kinematic threshold of the reaction by
about the nucleon binding energy. This result was now verified and it
was determined which particles accompany the photodeuterons. The authors
used a cloud chamber filled with He + O_2 and scintillation counter
telescopes in their experiments on the photodisintegration of O^{16} induced
by $E_{\gamma max} = 90$ Mev. Deuterons with $E_d \gtrsim 11$ Mev were recorded by the telescopes
(accuracy of E_d measurement: $\pm 5\%$) and the energies of the recoil nuclei

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Emission of fast deuterons in the ...

were determined from their tracks. For the N^{15} nuclei produced in $O^{16}(\gamma,p)N^{15}$ the range - energy curves were determined. Among the stereophotographs of 27 photodeuterons with E_d between 11 and 40 Mev there was none that could be attributed to an $O^{16}(\gamma,d)N^{14}$ reaction. With yields of 41% each, the reactions were of type (γ,dp) and (γ,dn) with thresholds of 28.25 and 31.2 Mev, respectively. The remaining reactions (18%) were multipronged stars with at least two particles besides the deuteron. If the (γ,dp) and (γ,dn) reactions are assumed to occur in two stages (emission of p and n after d) the excitation energy of the compound nucleus N^{14} can be estimated. When the low probability of $O^{16}(\gamma,d)N^{14}$ is taken into account, the first excited level of N^{14} $(O^+,T=1)$ is obtained as 2.31 Mev. The emission directions of the deuterons and the accompanying nucleons are correlated: in most cases p and n were emitted oppositely to d. Such a correlation exists only for nucleons with more than 2 Mev. There are 2 figures and 1 table.

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Emission of fast deuterons in the ...   S/056/62/043/005/015/058
                                             B102/B104

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii
              nauk SSSR (Physicotechnical Institute imeni A. F. Ioffe
              of the Academy of Sciences USSR)

SUBMITTED: June 29, 1962

Card 3/3

L 25494-66   EEC(k)-2/EWA(h)/EWT(l)/EWT(m)/ETC(f)/EWG(m)/T   IJP(c)   TT/AT/WW/JD/JG

ACC NR: AP6011402   SOURCE CODE: UR/0057/66/036/003/0533/0541

AUTHOR: Dunayev, Yu.A.; Yavor, I.P.; Busygin, E.P.

ORG: Physicotechnical Institute im. A.F.Ioffe, AN SSSR, Leningrad (Fiziko-
tekhnicheskiy institut AN SSSR)

TITLE: On the low voltage cesium vapor arc

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 3, 1966, 533-541

TOPIC TAGS: electric arc, cesium,   electron temperature, electron density,
cesium plasma, direct energy conversion, IR spectrum, electron temperature, spectral
line

ABSTRACT: The authors have investigated the visible and near infrared spectra of
low voltage hot cathode cesium vapor arcs. The investigation was undertaken because
of the technical importance of cesium arcs for the development of energy converters
and the presence in the literature of discordant data, particularly concerning electron
temperatures. The electrodes were of molybdenum; the 4 x 4 mm^2 working faces were
plane and parallel. The cathode was of foil and was heated by direct current. The arc
parameters were varied over the following ranges: electrode spacing, 0.5-2 mm; cathode
temperature, 1400-1800° K; cesium vapor pressure, 0.5-5 mm Hg; current density, 2-20
A/cm^2. The dispersion of the type DFS-12 spectrometer was 5 A/mm in the second order
(3000-6000A) and 10 A/mm in the first order (6000-12 000 A). The FEU-38 photomultiplier
employed to record the spectra was sensitive from 3000 to approximately 9000 A. The

Card 1/3

L 25494-66

ACC NR: AP6011402

arc was imaged at unit magnification on the spectrometer slit, which was parallel to
the plane of the electrodes; conditions in the arc could thus be observed between the
electrodes at different distances from them. Many cesium lines were observed in the
spectrum. Electron temperatures were determined from line intensities in the sharp
and diffuse series; the intensities were consistent with Boltzmann distribution of the
level populations. The electron temperatures ranged from 1200 to 3000 or 4000° K.
Electron concentrations were derived from the Stark broadening of lines of the funda-
mental series; electron concentrations of the order of 10^{14} or 10^{15} cm^{-3} were ob-
served. A number of forbidden lines were recorded. Electron concentrations derived
from the forbidden line intensities as suggested by L.I.Grechikhin and Ye.S.Tyunina
(TVT, 1, 399, 1963) were considerably lower than those derived from the Stark broad-
ening. In low current arcs the electron temperature increased almost linearly with
distance from the cathode throughout the whole electrode gap. In higher current arcs
the electron temperature at first increased more rapidly with distance from the cathode
than in low current arcs, but this increase did not persist throughout the full gap
and the electron temperature was nearly constant throughout most of the arc. The
spectrum lines were most intense in a region of the arc somewhat closer to the cathode
than to the anode. The electron density was maximum at a short distance from the
cathode. The position of the electron density maximum shifted toward the cathode
with increasing arc currents, and at the highest currents the presence of a maximum
could not be established. The physical mechanisms responsible for the observed distri-
butions are discussed briefly but no definite conclusions are reached. The fact that
the maximum electron temperature and maximum electron density occur in different

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regions of the arc is difficult to explain without invoking stepwise ionization
processes. The authors thank Ye.Ya.Shreyder for spectroscopic consultations, L.I.
Grechikhin for making calculated data available to them, and B.Ya.Moyzhes and .
F.G.Baksht for discussions. Orig. art. has: 7 figures and 1 table.

SUB CODE: 20   SUBM DATE: 17Jun65   ORIG. REF: 004   OTH REF: 009

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USSR.

5402
INVESTIGATION OF FOCUSING PROPERTIES OF MAG-
NETIC CYLINDRICAL LENSES AND SYSTEMS COMPOSED
OF SUCH LENSES. S. R. Yavor. Zhur. Tekh. Fiz. 25,
779-90(1955) May. (In Russian)

YHVOK, S. Yч.

Card 1/1   Pub 153-20/26

Author   : Kelman, V. M. and Yavor, S. Ya.

Title   : Motion of charged particles in a homogeneous magnetic field on which
                 the magnetic field of a linear current and the electric field of a
                 cylindrical condenser are superposed

Periodical   : Zhur. tekh. fiz. 24, 1329-1332, Jul 1954

Abstract   : Expressions defining the motion of charged particles in a homo-
                 geneous field on which the magnetic field of a linear current
                 and the electric field of a cylindrical condenser are superposed
                 are obtained in the form of quadratures. Numerical integration
                 is carried out in certain particular cases. One reference, by
                 the same author.

Institution   : --

Submitted   : July 29, 1953

YAVOR, S. Ya.

FD-1037

USSR/ Physics - Electron optics

Card 1/1   :   Pub. 153 - 8/23

Authors   :   Kel'man, V. M. Kaminskiy, D. L., and Yavor, S. Ya.

Title   :   Experimental investigation of cylindrical magnetic electronic lenses

Periodical   :   Zhur. tekh. fiz., 24, 1410-1427, Aug 1954

Abstract   :   Discuss results of experimental investigation into the electron-
                    optical properties of the magnetic cylindrical lense whose field
                    differs but slightly from the field of two infinite rectlinear
                    oppositely directed currents and also into the systems consisting of
                    two such lenses. Give graphs showing the relation between object
                    position and image for various current strengths. Thanks Diplomat
                    V. P. Vlasenko. Seven references, 2 USSR (N. I. Shtepa, ZhTF, 216,
                    1952; A. M. Strashkevich, ZhTF, 91, 1940).

Institution :   - -

Submitted   :   16 March 1954

YAVOR,S.Ya.; KEL'MAN,V.M., professor

[Magnetic cylindrical lenses] Magnitnye tsilindricheskie linzy.
Leningrad, 1955. 9 p.   (MLRA 9:3)
                (Electrooptics) (Lenses)

YAVOR, S.Ya.

Investigation of the focusing properties of magnetic cylindrical lenses
and lens systems. Zhur. tekh. fiz. 25 no.5:779-790.My'55. (MLRA 8:7)
    (Magnetooptics) (Electron microscope)

FD-3178

USSR/Physics - Electron Optics

Card 1/1   Pub. 153-8/21

Authors   : Kel'man, V. M. and Yavor, S. Ya.

Title   : Investigation of a cylindrical magnetic lens with an iron shell

Periodical: Zhur. tekh. fiz., 25, No 8 (August), 1955, 1405-1411

Abstract   : The authors investigate the electron-optical properties of a jacketed cylin-
drical magnetic lens encased in iron plates 80 cm long. After a physical
description of the apparatus they outline its operational characteristics,
expressing the data in graphical form. They give the curve of field distri-
bution, variation in field intensity, dependence of angle of rotation at
various lens-to-object distances, as well as other curves expressing various
interrelationships among these characteristics.

Submitted : March 9, 1955

PHASE I BOOK EXPLOITATION   SOV/3514

Kel'man, V.M., and S.Ya. Yavor

Elektronnaya optika (Electron Optics) Moscow, Izd-vo AN SSSR, 1959.   372 p.
   3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Fiziko-tekhnicheskiy institut.

Ed.: L.A. Artsimovich, Academician; Ed. of Publishing House: Yu.K. Imshenetskiy;
   Tech. Ed.: A.V. Smirnova.

PURPOSE: The book is intended for students of electron optics.

COVERAGE: The book deals primarily with geometrical electron optics and does not
   discuss wave properties of electrons. In addition to the theory of focusing
   particle beams in fields with symmetry of rotation, the theory of focusing in
   electromagnetic fields with arbitrary space distribution is presented. Cylin-
   drical electron lenses and various kinds of deflection systems are discussed in
   detail. Much space is devoted to calculations of the motion of charged particles.
   The last two chapters are devoted to applications of electron optics. No per-
   sonalities are mentioned. There are 277 references, 119 Soviet (17 are transla-
   tions), 88 English, 48 German, 13 French, 3 Chinese, and 6 Scandinavian.
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SOV/57-30-2-1/18

AUTHORS: Kel'man, V. M., Yavor, S. Ya., Fishkova, T. Ya.

TITLE: Achromatic Magnetic Mirrors

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol 30, Nr 2,
                pp 129-137   (USSR)

ABSTRACT: To achieve a deflection or displacement of non-
                monochromatic beams of charged particles without sep-
                arating them according to energy, Kel'man and Lyubimov
                (Izv. AN SSSR, ser. fiz., 18, 155, 1954) used a mag-
                netic mirror whose magnetic field vector potential A
                satisfies the equation:

$$A_x = A(yx) = \mathrm{Re}\left[-\frac{H_0}{k^2}(y+iz)^k\right], \quad A_y = A_z = 0, \tag{1}$$

                where H_0 and k are constants. For a particular choice
Card 1/13   of k, one can find an angle a_0 for the incoming

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particles, such that all particles of various energies entering the field at that angle in the central plane describe similar trajectories and emerge out of the field at the point of entrance as a single beam (see Fig. 1).
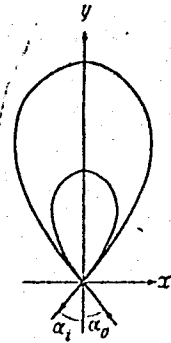

Fig. 1. Similar trajectories in an achromatic magnetic mirror. (α_0) angle of incidence; (α_1) angle of reflection.

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In addition to checking the known values of α_0 for k = 1 and k = 2, the authors of this paper evaluated the necessary k's for angles $\alpha_0 = 30°$ and $\alpha_0 = 45°$.

Mirrors with $\alpha_0 = 30°$ angles arranged along sides of an equilateral triangle or mirrors with $\alpha_0 = 45°$ forming a parallelogram could then be used to maintain closed trajectories of particles. The authors start from the solution of the differential equation of motion for charged particles in the central plane of a two-dimensional magnetic field, which for the initial conditions $x_0 = y_0 = 0$ has the form:

$$x = \int_0^y \frac{\frac{eH_0}{mcv}\frac{y^k}{k} - \sin \alpha_0}{\sqrt{1 - \left(\frac{eH_0}{mcv}\frac{y^k}{k} - \sin \alpha_0\right)^2}}\, dy. \qquad (5)$$

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Here e, m, and v are charge, mass, and velocity, respectively, of the particle; c is velocity of light;

$$m = \frac{m_0}{\sqrt{1-v^2/c^2}},$$ where m_0 is rest mass of the particle.

In the central plane (z = 0) the field has the value:

$$H_x = H_y = 0, \quad H_z = H_0 y^{k-1}, \qquad (4)$$

where k can take integer and fractional values. Using the known values for k versus α_0: k = 1, α_0 = 90°; k = 2, α_0 = 40°; and k = 3, α_0 = 28°, the authors constructed an approximate curve k = k(α_0). Choosing approximate k values, they calculated curves by performing numerical integration of Eq. (5). Typical curves are presented on Fig. 3. From the form of the curve they could decide if k should be increased or decreased to obtain the desired correct curve.
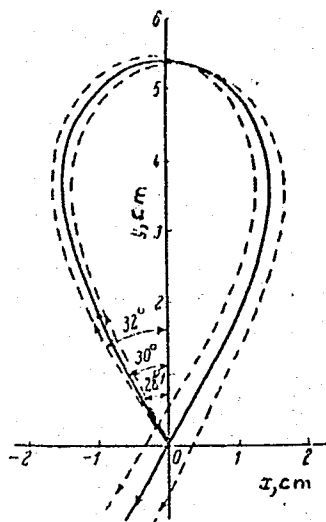
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Fig. 3. Trajectory of charged particles in the central plane of the mirror, with k = 2.75 at incidence angles of 28, 30, and 32°.

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The results of calculations are contained in Table A.

Table A. (a) Initial conditions; (b) data obtained by numerical integration of system of Eqs. (7); (c) data obtained by numerical integration of Khurgin's Eq. (10); (d) degrees.

k	a			b				c	
	α_0 degrees	τ_0 degrees	x_0 cm	α_1 degrees	y_1 degrees	x_1 cm	z_1 cm	τ_1 degrees	x_1 cm
2	40.7	3	0	46.2	−7.4	−0.71	1.88	—	—
2	40.7	0	2.00	36.6	−2.6	0.76	−1.12	—	—
3	27.6	3	0	29.0	4.0	−0.64	1.67	—	—
3	27.6	0	1.00	28.0	−1.7	−1.18	1.90	—	—
1.81	45	3	0	51.7	−9.2	−0.84	2.01	−5.4	2.08
1.81	45	0	2.00	44.6	−0.4	0.70	−1.92	−2.6	−2.58
2.75	30	3	0	30.2	0.9	−0.67	1.68	8.2	1.82
2.75	30	0	0.50	28.5	2.4	−0.26	1.08	4.4	1.17
2.75	30	0	2.00	27.7	−4.2	−0.58	−0.03	17.0	4.67

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This table contains also data about trajectories not lying in the central plane, obtained by two methods. One is by numerically integrating the exact system of equations of motion:

$$\frac{dx}{ds} = C + \frac{eH_0}{mcv} \frac{(y^2 + z^2)^{\frac{k}{2}}}{k} \cos\left(k \operatorname{arc} \operatorname{tg} \frac{z}{y}\right),$$

$$\frac{d^2 y}{ds^2} = -\frac{eH_0}{mcv}(y^2 + z^2)^{\frac{k}{2}-1}\left[y\cos\left(k\operatorname{arc}\operatorname{tg}\frac{z}{y}\right) + z\sin\left(k\operatorname{arc}\operatorname{tg}\frac{z}{y}\right)\right] \times$$

$$\times\left[C + \frac{eH_0}{mcv}\frac{(y^2+z^2)^{\frac{k}{2}}}{k}\cos\left(k\operatorname{arc}\operatorname{tg}\frac{z}{y}\right)\right],$$

$$\frac{d^2 z}{ds^2} = \frac{eH_0}{mcv}(y^2+z^2)^{\frac{k}{2}-1}\left[y\sin\left(k\operatorname{arc}\operatorname{tg}\frac{z}{y}\right) - z\cos\left(k\operatorname{arc}\operatorname{tg}\frac{z}{y}\right)\right] \times$$

$$\times\left[C + \frac{eH_0}{mcv}\frac{(y^2+z^2)^{\frac{k}{2}}}{k}\cos\left(k\operatorname{arc}\operatorname{tg}\frac{z}{y}\right)\right],$$

(7)

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where s is length of path traveled by the particle,
C is a constant which is a function of initial
conditions. The other is by integrating the
approximate equation by Khurgin:

$$\frac{d^2z}{ds^2} = \left[\left(\frac{eH_0}{mcv}\right)^2 \frac{k-1}{k} y^{2(k-1)} - \frac{eH_0}{mcv}(k-1)y^{k-2}\sin a_0\right]z. \qquad (10)$$

γ_0 denotes the angle between the XY plane and initial
particle direction for particles starting in the central
plane (see Fig. 6); z_0 is the initial distance from the
XY plane for particles entering the field parallel to
the XY plane; γ_1 is the angle between direction of the
exit of the particle and the central plane; a_1 is the
angle between the projection of that direction in the XY
.plane and the negative Y axis direction. In all
cases the quantity $\frac{eH_0}{mcv}$ was equal to 0.04 per cm^k.

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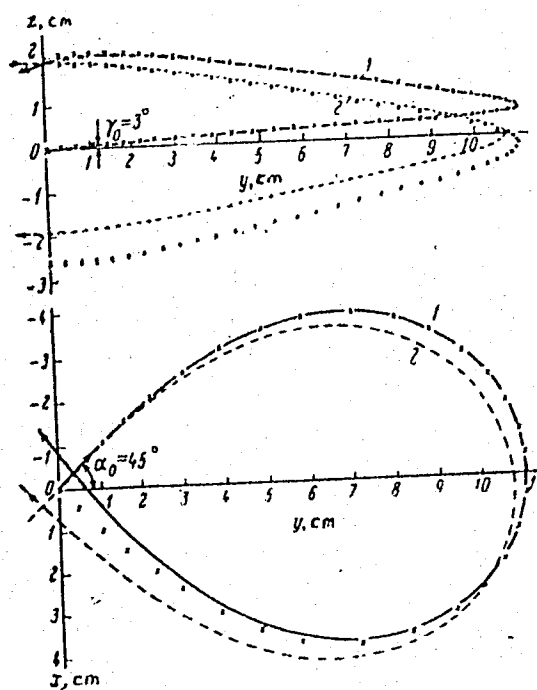Achromatic Magnetic Mirrors   77304
                                                     SOV/57-30-2-1/18

Figure 6 represents an interesting case where a particle entering the field parallel to the central plane comes out again parallel to that plane (curve 2).
A field with such a special k value can then be used for displacement of parallel beams of particles with various energies.

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Fig. 6
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Caption to Fig. 6.

Fig. 6. Projections on YZ and XY planes of two space trajectories in a field with k = 1.81. Initial conditions: trajectory (1): $x_0 = y_0 = z_0 = 0$, $\alpha_0 = 45°$, $\gamma_0 = 3°$; trajectory (2): $x_0 = y_0 = 0$, $z_0 = 2$ cm, $\alpha_0 = 45°$, $\gamma_0 = 0$. Crosses indicate trajectories with the same initial conditions, but computed using the method of Khurgin.

Using a method described by Kel'man and Lyubimov, the authors constructed a field for k = 1.81, and its values agreed fairly well with Eq. (4). Further improvements were obtained by means of additional windings on the shielding and the magnet laminas. The authors point out that one can obtain the desired result,

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i. e., the deflection or displacement of a nonmono-chromatic charged particle beam by utilizing two mirrors with a lateral displacement of particles of different energies in the manner indicated on Fig. 10.
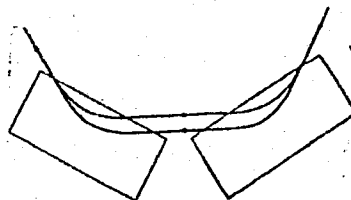

Fig. 10.   Deflection of a nonmonochromatic beam by means of two mirrors with noncompensated displacements.

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There are 10 figures; 1 table; and 6 references, 5 Soviet, 1 U.S. The U.S. reference is: W. K. H. Panofsky, J. A. McIntyre, Rev. Sci. Instr., 25, 287, 1954.

ASSOCIATION: Physico-technical Institute AS USSR, Leningrad (Fiziko-tekhnicheskiy institut AN SSSR, Leningrad)

SUBMITTED: July 6, 1959

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S/057/60/030/04/02/009
B004/B002

AUTHORS: Yavor, S. Ya., Shpak, Ye. V., Minina, R. M.

TITLE: Cylindrical Magnetic Lenses With an Antisymmetric Plane

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 4,
              pp. 395-404

TEXT: First, the authors discuss the course of electron paths in anti-
symmetric systems, and the position of the linear image. They derived
the vector potential of a lens consisting of two linear, parallel con-
ductors of infinite length, through which currents of equal intensities
flow in the same direction (two-conductor lenses, Fig. 1). The voltage
distribution measured and calculated according to equations (3) and (4),
in the magnetic field of such a lens, is shown in Fig. 2. Fig. 3 gives
the arrangement of a four-conductor lens, and Fig. 4 shows its field
calculated according to equation (5), and the respective experimental
values. In the case of two-conductor lenses, integral (7) and the Khurgin
equation (8) are given for electron paths lying in the central plane.
Fig. 5 gives the paths calculated for different initial angles α_0 between

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electron path and axis z. The conditions for the position of the image
center are discussed, and in Fig. 6 the projections of four electron
paths on the xz- and yz planes are represented. Equation (8) is numerical-
ly integrated according to Shtermer's method (Ref. 9). Table 1 gives
the image coordinates of 4 kev electrons. In the case of four-conductor
lenses, integral (9) and the Khurgin equation (10) are also given for
the electron paths of the central plane. The paths of the central plane
are likewise shown (Fig. 7) as well as their projections on the planes
xz and yz (Fig. 8), and the image coordinates are given in Table 2.
In Fig. 9 the authors show the scheme of their experimental setup for
the investigation of electron optical properties of the lenses. The
4 kev electron beam with a divergence angle of 5° was directed into a
vacuum chamber by means of an electron gun, and the image was observed
on a sliding fluorescence screen. The horizontal and vertical components
of the earth's magnetism were compensated by two solenoids for the
fields of which equations (11) and (12) are given. Four lenses consist-
ing of coils wound upon square brass frames of 1 m length and different
widths, were tested. The measuring results are in good agreement with
the calculations (Figs. 2-4). The images observed, are also described. /C

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Figs. 10 and 11 show the dependence of the ampere windings of the lenses
on the image coordinate ζ_b. When a critical value of the current
intensity is attained, the electrons fly back, and the lense acts as a
mirror. There are 11 figures, 2 tables, and 9 references: 8 Soviet and
1 British.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR Leningrad (Institute
of Physics and Technology of the AS USSR, Leningrad)

SUBMITTED: August 24, 1959

$\sqrt{c}$

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